# U. S. NAVY MEDICINE

October 1980

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# U.S. NAVY MEDICINE

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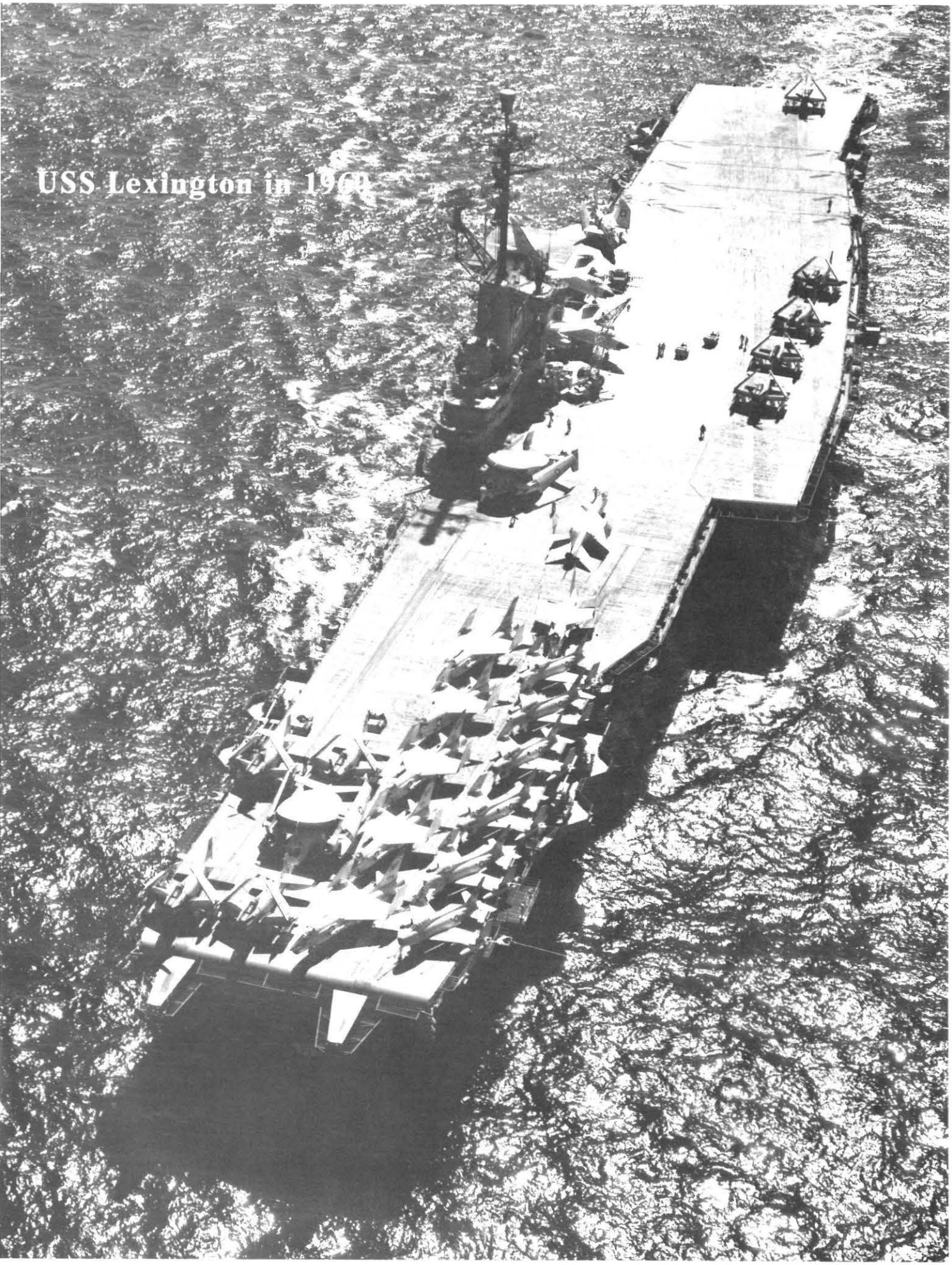
**October 1980**



**COVER:** LT Louis Dickey, MC, USNR, is Senior Medical Officer aboard USS *Lexington*, the Navy's only training aircraft carrier. An interview with Dr. Dickey appears on page 2.


USS Lexington in 1960

# U.S. Navy Medicine Visits Navy's Oldest Carrier

USS Lexington (*AVT-16*) *is neither young nor ordinary. The World War II vintage aircraft carrier fought her way through some of the fiercest naval battles in the Pacific and survives today as the Navy's only training carrier.*

*Decommissioned after the war and mothballed until 1955,* Lexington *was overhauled, given a new angled flight deck, and recommissioned as an attack carrier, serving many deployments worldwide. The same ship that once launched aircraft into combat against the Imperial Japanese Navy and survived a torpedo and a flaming Kamikaze crash during the Battle for Leyte Gulf, now handles only training flights. Since 1962,* Lexington *has cruised the Gulf of Mexico, providing carrier experience for student pilots, requalifying pilots, and Naval Reserve aviators.*

*"This assignment has offered me tremendous experience and is quite a responsibility for a lieutenant."*

*Dr. Dickey*

U.S. NAVY MEDICINE *recently talked with* Lexington*'s Senior Medical Officer, LT Louis Dickey, MC, USNR, at the vessel's home port in Pensacola, FL. Dr. Dickey's tour is a special one for him. His father served aboard the* "Lex" *as a boiler technician during its most active wartime service over 35 years ago.*

**USNM: This is your first assignment aboard ship. How did you become senior medical officer of the Navy's oldest aircraft carrier?**

**Dr. Dickey:** During my fourth year of medical school at the University of Oklahoma, I learned about the Navy flight surgeon program from a physician I worked with. I came to Pensacola before my internship, was interviewed, and had my physical exam at NAMI (Naval Aerospace Medical Institute). I then did a flexible internship at Breckinridge Hospital in Austin, TX. In 1977, I was accepted for the Navy program and was commissioned. A year later, I came to Pensacola to begin my flight surgeon training and afterward went to the Naval Undersea Medical Institute at Groton, CT, where I was trained as a submarine diving/radiation health medical officer. I finished there in 1979 and came back to NAMI to work in the hyperbaric chamber/physical exam section. In April of this year, I took this position on USS *Lexington.*

**What type of training did you get at Groton?**

It was a six-month course, with four months at Groton, where we learned about submarines and related medical problems. We spent about five weeks of those four months studying radiation health and biology, and nuclear reactors and weapons. The remaining two months were spent at the diving school at the Washington Navy Yard.* We spent three weeks in the classroom and five weeks actually diving in various diving rigs.

*The Navy School of Diving and Salvage has since moved to Panama City, FL.

*USS* Lexington *during World War II*

**As senior medical officer, do you encounter any problems that might be unique to the Navy's only training carrier?**

The ship, as you know, is quite old and was built at a time when such problems as heat stress and asbestosis were unrecognized. On the "*Lex,*" we have to be more diligent and spend much more time in these occupational and preventive medicine related areas. Newer carriers, of course, are designed to eliminate much of this.

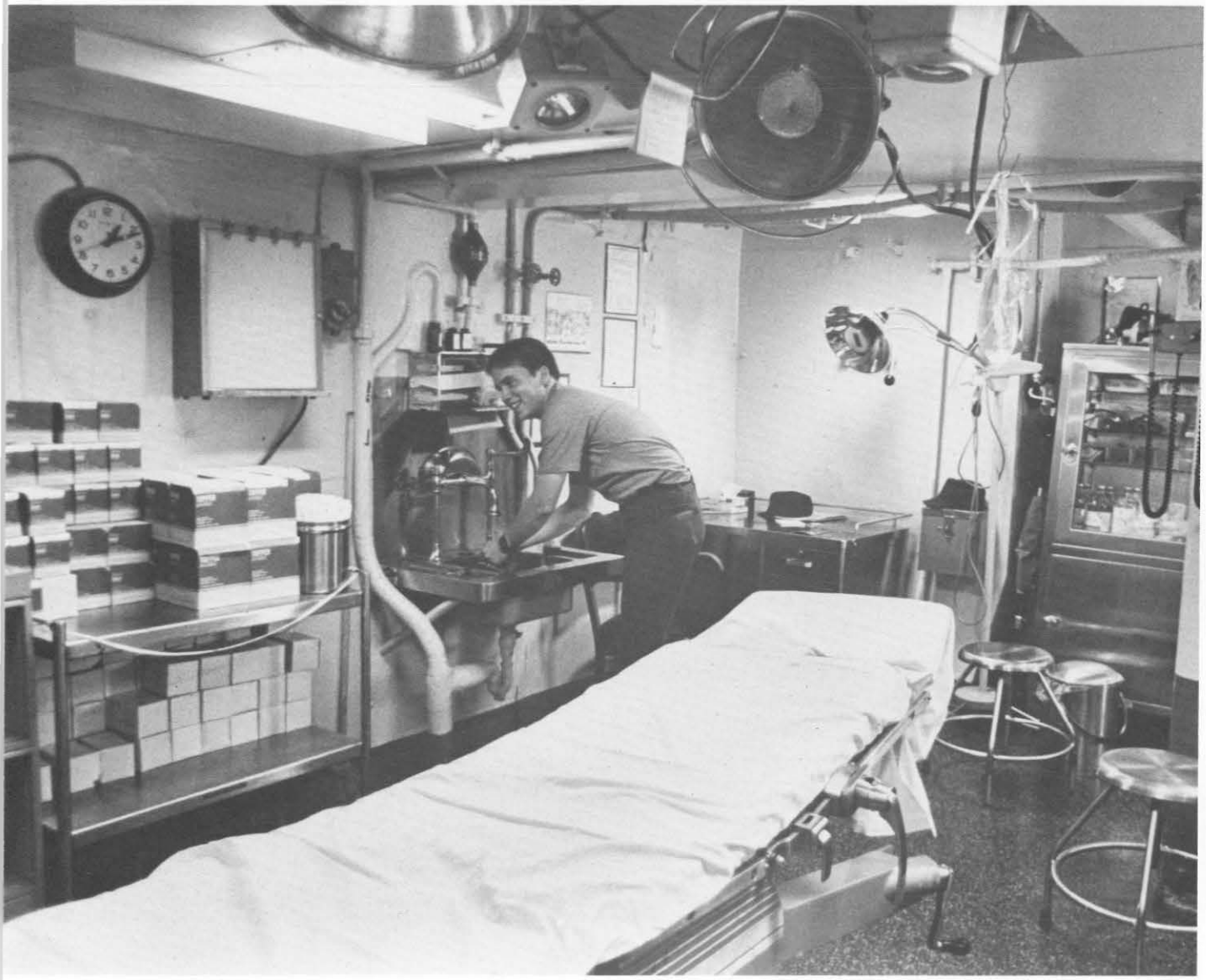
We also have our fair share of drug and alcohol problems and the usual things that would be common on any carrier.

**What's your normal cruising schedule?**

We normally go out two weeks a month, cruising the Corpus Christi area for a week and then coming back to spend a week off Pensacola conducting our training flights. We then return to base for two to three weeks. Sometimes, *Lexington* represents the Navy at ceremonial functions. In October we will represent the Navy at Fort Lauderdale and conduct a cruise for World War II veterans who served aboard.

**There must be something very special about serving aboard such an historic vessel.**

There is, especially for me. My father was on the same ship during World War II. He worked in the fire room as a boiler technician from '44 through '46 and was aboard when it was torpedoed and Kamikazied. He and I have talked at length about the ship and he was quite proud



*USS* Lexington*'s sick bay*

when he heard about my assignment. In fact, he came down in August and went on a cruise with me.

This assignment has offered me tremendous experience and is quite a responsibility for a lieutenant. However, I've found the command and line officers to be very supportive. I really believe that medical officers who never get out of the hospital environment during their careers really miss seeing an important part of the Navy.

**What kind of assignment are you looking for after this one?**

I have applied for the aerospace residency at NAMI. If I'm accepted, that would be a three-year residency. I would then probably go aboard another carrier as a senior medical officer.

**Then, you really don't mind another shipboard duty assignment?**

Not at all. It's very difficult to describe what it's like being on a ship. There are some inconveniences. You have to be careful about your water usage. You sometimes get tired of being on something that's only 900 feet long. But there are many compensations. At the dock, the ship is just an inanimate, piece of metal. But when you're out in the Gulf, see everyone working, and feel the ocean air and the vibration of the engines, the ship is alive and exciting. To play a part in keeping it that way gives me a real sense of purpose. —JKH □

# BUMED SITREP

## NURSE CORPS DIRECTOR WEARS TWO HATS

On 26 Aug 1980, the Director of the Nurse Corps, RADM Frances T. Shea, NC, USN, assumed additional duty as Commanding Officer of the Health Sciences Education and Training Command at NNMC Bethesda, MD.

## FINANCIAL AND SUPPLY MANAGEMENT COURSE

The fifth offering of the Financial and Supply Management Training Course will be conducted 2 Mar 1981-22 May 1981. Commands are requested to identify junior officers with interest and potential in the resource management area and encourage their applicants in accordance with BUMEDINST 1520.12J of 23 July 1980. Additional information is available from LCDR C. Henderson, Naval School of Health Sciences, National Naval Medical Center, Bethesda, MD 20014. Telephone: (202) 295-1314.

## WHITE HOUSE FELLOWSHIPS

Applications for the 1980-81 White House Fellows competition are now available. Persons selected as White House Fellows serve for one year in positions within the administration which offer first-hand insight into the process of the Executive branch of the Federal Government. Application forms will be available until 1 Nov 1980 and must be completed and returned before 17 Nov 1980. To procure an application write: The President's Commission on White House Fellowships, 1900 E St., N.W., Washington, DC 20415. For further details consult NAVMILPERSCOM NOTICE 1560 or call the Navy Program Manager (NMPC 440) at Autovon 224-3321.

## MEDICO-LEGAL FEEDBACK: MOONLIGHTING

All Medical Department officer personnel should again be reminded that off-duty remunerative professional employment ("moonlighting") is permitted only with the approval of the commanding officer, and only if it meets the criteria of MANMED art. 1-22.

Among the restrictions in art. 1-22 is the provision that one cannot accept a fee, either directly or indirectly, from one who is entitled to care at military or VA medical facilities. The example cited in the manual is acceptance of pay for treating military beneficiaries in an emergency room staffed by a military physician.

It has come to our attention that some physicians are moonlighting by doing insurance physicals. Such a practice, if properly approved by the commanding officer, can be a legitimate form of off-duty employment. Acceptance of fees for insurance physicals on military or VA beneficiaries, however, would violate the restriction discussed above. The insurance applicant who is entitled to care at Government expense should be referred to a nonmilitary physician who does insurance physicals for the company concerned. In the alternative, the physical can be done by the military physician *provided* that he does not accept any fee for that particular examination.

## ACCIDENTAL USE OF HEMACULT

There is a similarity in the packaging characteristics of *Hemacult* and *Ophthaine* brand of proparacaine, an ophthalmic topical anesthetic manufactured by Squibb. One of our regional medical centers recently reported an incident in which a patient received Hemacult instead of Ophthaine in the eye while being treated in the emergency room. Hemacult can produce corneal scarring; however, this particular individual recovered without further difficulty because of the immediate corrective action taken. In order to prevent local recurrence of this incident, the following corrective actions were taken:

- Ophthamine was removed from all medical spaces in the region except the ophthalmology clinic;
- An alternative brand of topical ophthalmic anesthetic with different packaging was substituted;
- All Hemacult is stored only in Hemacult testing/developer kits;
- All Hemacult bottles from which warning statement has been removed have been discarded;
- Ophthaine brand of proparacaine will not be used in its present packaging form except in the ophthalmology clinic;
- A monitoring system will be established and the pharmacy officer will review stocks still held in regional facilities.

The matter of the packaging of the Hemacult and Ophthamine solutions has been brought to the attention of the Navy Medical Material Supply Command for appropriate action so that similar difficulties can be avoided in the future.

# Relevance of Caffeine Symptomatology to Alcohol Rehabilitation Efforts

LT Serge R. Doucette, MSC, USN
Alan Willoughby, Ph.D.

The approach taken here is based on the evidence in the literature that the symptoms experienced by alcoholics, during withdrawal and while in treatment, parallel the actions of certain other drugs and/or diseases. (*1,2,3,4,5,6,7*) The symptoms we are referring to are: tremors, anxiety, insomnia, feelings of unreality, nausea, vomiting, fatigue, and headaches. The particular symptoms and their severity vary with the individual and the situation. Ample evidence in the literature supports the fact that alcoholics frequently experience these symptoms. Whatever the origins, the actual symptoms and the consequent behavior empirically concern us in alcohol rehabilitation efforts. (*2,7,8,9,10,11*)

Whatever the model or treatment modality utilized in alcohol rehabilitation efforts, these symptoms are often described as manifestations of various stress and anxiety reactions or are a result of alcohol withdrawal. Some theories advocate that alcoholism and its maintenance are based on rapid, short-term tension reduction following the ingestion of ethyl alcohol. (*2,9,10,11*) It is generally accepted by diverse theorists that perceived stress and anxiety constitute circumstances under which the alcoholic is most likely to take another drink. Proponents of diverse rehabilitation systems are in agreement that anxiety reduction is paramount in the treatment and rehabilitation of the alcoholic. (*2,7,8,9,10,11*)

Medication (drugs), counseling, and education are used in many combinations and take on many forms when dealing with the anxiety states experienced by the alcoholic. Whatever the treatment program, the symptoms of stress and anxiety reactions and their reduction most certainly are a central concern for rehabilitation. The preceding, taken together with an understanding of the physiological effects of caffeine use and the physiological/psychological aspects of alcohol withdrawal, creates a strong link in relating caffeine use/abuse to alcoholism rehabilitation efforts.

The symptoms of heavy caffeine use, toxicity, and withdrawal are: tremors, anxiety, insomnia, nervousness, nausea, vomiting, headaches, functional cardiac symptoms, and sensory disturbances, with caffeine psychosis having been reported. (*3,4,5,6,7,12,13*) The particular symptom cluster and its severity appears to be related to individual history of caffeine use and dosage. Extreme caffeine levels, although demonstrably toxic, rarely result in death, with only two instances having been recorded. (*14,15*) With regard to toxicity levels, the literature is mildly variable, with toxic effects reported between 700 mg and 1 gm. (*6,7,13*)

The results of heavy caffeine use result in perceived, subjective stress or anxiety. Continued heavy use results in the development of tolerance, a consequence which has been used to explain the differential effects of caffeine non/light users and heavy users. (*1,3,4,5,6,7*)

With the widespread use of caffeine-containing drugs, it is not surprising to expect the observance of these symptoms in many cases, with varying degrees of severity. It is surprising, however, that there appears to be little concern or control given to caffeine consumption when diagnosing physiological/behavioral disorders. The following summary, although concerned with "caffeinism" and anxiety neurosis, illustrates the diagnostic difficulty or source of error when dealing with caffeine abuse.

"The author reports that high intake of caffeine (caffeinism) can produce symptoms that are indistinguishable from those of anxiety neurosis, such as nervousness, irritability, tremulousness, occasional muscle twitchings, insomnia, sensory disturbances. The caffeine withdrawal syndrome and the headache associated with it may also mimic anxiety. Patients with caffeinism will generally be identified only by routine inquiry into their caffeine intake. The psychiatrist should especially suspect caffeinism

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in patients who do not respond to psychopharmacological agents or who have psychophysiological complaints and recurrent headache, chronic coffee drinking patients on inpatient psychiatric services, and "hyperkinetic" children. Three case reports illustrate the syndrome." (*6*)

Based on the information presented, the following is postulated:

- Anxiety and depression are dangerous to the alcoholic who is trying to abstain from alcoholic beverages, for it is at these times that he/she is most likely to take a drink. A central goal of all alcohol rehabilitation efforts is to teach the alcoholic to identify and cope with anxiety and depression.
- Caffeine is a known source of anxiety and depression. The anxiety, etc., often experienced by alcoholics days, weeks, or months after alcohol withdrawal may be related to their caffeine consumption. Caffeine use (as little as 500 mg daily) has been shown to cause the symptoms described. It is hypothesized that many individuals in alcohol rehabilitation programs (including Alcoholics Anonymous) are ingesting sufficient amounts of caffeine to result in the occurrence of these symptoms.
- Alcohol rehabilitation specialists are not concerning themselves with the known effects of caffeine usage. Therapists and alcoholics as a matter of usual course, associate these symptoms with personal problems, illness, alcohol, or the alcoholic's personality, and treatment is focused in that direction.
- Awareness of caffeine use and its effects should become a part of alcohol rehabilitation efforts. Alcoholics, abstaining from alcohol, who are taking caffeine, may be aggravating their treatment and sobriety.

Postulates number one and two are self-evident from the literature, and require no further substantiation. While the literature presents overwhelming evidence for heavy and excessive use of caffeine in the general populace, only one paper relates directly to the alcoholic's consumption of caffeine. (*16*) Our first experiment was conducted to better determine the actual levels of caffeine consumption by the alcoholic population.

The basis for postulate three is indirectly present in the literature in that no reference to caffeine is evident in repeated discourses on the manifold aspects of alcohol rehabilitation efforts. Our second experiment was designed to test the validity of this postulate.

Postulate number four is the logical conclusion to be drawn should the preceding postulates be substantiated.

## Experiment 1

### Method

**Subjects.** Male and female members of Alcoholics Anonymous and nonalcoholics were solicited for this study. The only requirement was that alcoholics had completed detoxification prior to this study and were abstinent at the time of data collection.

**Beverage Log.** A pocket size beverage log was constructed (Appendix A), with one sheet asking background information, and four identical sheets to record beverage consumption. Noncaffeinated beverages were listed for the purpose of disguising our caffeine interest. The background information was requested to gain further information that may prove of value in the evaluation and improvement of alcohol rehabilitation efforts.

**Procedure.** Logs were distributed to the volunteers, with the only identification on the log being a code number. Identification of alcoholics was achieved by the date of their last alcoholic beverage and a check mark by the code number on the last sheet. Individuals were informed that the purpose of the survey was to monitor the amount and type of beverages alcoholics are drinking while abstaining from alcohol. This information, it was said, was to be compared to nonalcoholics' beverage consumption. They were to maintain the log honestly and reliably for four consecutive days.

**Results.** A total of 82 logs was completed and evaluated, with 40 alcoholics and 42 nonalcoholics comprising the sample.

**APPENDIX A. Beverage Log**

Experiment 1

Daily Beverage Log _____
Code # _____ Date started log _____
Date of last alcohol beverage _____
Sex _____
Age _____
Nonsmoker _____
Smoker _____
Type: (cigarettes, cigars, etc,) and daily amount _____

Day _____ Code # _____

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Reg Coffee | | | | | | | |
| Inst Coffee | | | | | | | |
| Hot tea | | | | | | | |
| Iced tea | | | | | | | |
| Soda* | | | | | | | |
| Milk | | | | | | | |
| Juices* | | | | | | | |
| Cocoa | | | | | | | |
| Other* | | | | | | | |

*Specify

**TABLE 1. Caffeine Levels of Beverages Monitored in Study**

| Experiment 1 | |
|---|---|
| Regular Coffee | 125 mg/serving |
| Instant Coffee | 92 mg/serving |
| Tea | 67 mg/serving |
| Soda* | 50 mg/serving |

*Only cola was used as a caffeine beverage for the purpose of this study.

The values used in the computation of the caffeine levels are taken from a paper by Greden. (*6*) In that paper, minimum and maximum levels are given for each beverage, and these values were used to obtain an average caffeine level per serving. These values are reported in Table 1. Individual logs were assessed for total caffeine consumption, and a mean daily consumption for each group was computed. These values and the background information are reported in Table 2.

The background information reported is informative and may prove valuable in further investigations. The main interest at this time, however, lies in the high daily caffeine consumption. Both groups are ingesting a significant amount of caffeine, with the alcoholics at more than twice the amounts of nonalcoholics (t test significant at the .001 level). Development of the reasons for the large differences between these groups is left to future investigations.

The results of this experiment illustrate that there are alcoholics who are consuming levels of caffeine that have been shown to produce the "caffeinism" symptoms described previously.

**TABLE 2. Analyses of Beverage Logs**

| | Experiment 1 | |
|---|---|---|
| | Nonalcoholics* | Alcoholics** |
| **Age** | | |
| Mean | 38.12 | 42.15 |
| S.V. | 9.25 | 9.12 |
| Var. | 85.62 | 83.16 |
| **Sex** | | |
| Males | 14 | 22 |
| Females | 28 | 18 |
| Nonsmokers | 76.19% | 32.50% |
| Males | 71.43% | 27.27% |
| Females | 78.57% | 38.89% |
| Smokers | 23.81% | 67.50% |
| Males | 28.57% | 72.73% |
| Females | 21.43% | 61.11% |
| Total | | |
| Mean | 1.10 pk/day† | 1.46 pk/day |
| S.D. | .5798 | .58 |
| Var. | .3361 | .27 |
| ETOH Abstinence*** | | |
| Mean | | 6.18 yrs. |
| S.D. | | 5.24 |
| Var. | | 27.44 |
| **Caffeine** | | |
| Mean | 424.35 mg/day†† | 908.08 mg/day†† |
| S.D. | 272.62 | 500.94 |
| Var. | 74318.86 | 250935.98 |

*n=42
**n=40
***n-33; 7 unreported dates; rounded to nearest year
†Significant at p less than .05
††Significant at p less than.001

## Experiment 2

### Method

**Subjects.** Male and female volunteers were drawn from the following three populations:

Population #1—Professional (medical and nursing personnel psychiatrists, psychologists)

Population #2—Counselors (personnel trained in the area of: education, identification, and treatment of alcohol abuse and alcoholism)

Population #3—Others (persons who are undergoing, or have undergone: education, identification, and treatment for alcohol abuse or alcoholism)

**Situation Questionnaires.** Two forms of a questionnaire (Form A and Form B), depicting four different individuals displaying a set of symptoms were developed. Each form of the questionnaire contains four situations or vignettes in which an individual experiences the following symptoms: tired, trouble getting to sleep, nervous energy, headaches, tremors, irritable, and moody. Each vignette is designed so that a salient cue relating to the possible source of the symptoms is present. In vignette #1, the salient cue is alcohol; the individual has a past history of alcohol abuse. Vignette #2, the salient cue is coffee abuse; the individual is drinking a large amount of coffee. Vignette #3, the salient cue is the combined use of coffee and alcohol; the individual is drinking too much coffee and alcohol. Vignette #4, environmental factors are the salient cue due to the absence of alcohol and coffee cues. These four vignettes were created to determine if the presence of a particular salient cue, such as alcohol use, would result in the ignoring of caffeine use by the individual as a possible source of the symptoms.

The following three questions were asked after the presentation of each situation: 1. From the information given, list in order of priority, some things you think might be causing (NAME) to be feeling and acting the way he is. 2. What specific questions would you ask (NAME) so as you might determine what is wrong? 3. What advice might you offer (NAME)?

The two forms of the questionnaire differ only in the names of the individuals and the circumstances surrounding the presentation of the salient cue in each vignette. The cover page of the questionnaires presents the guise that this study was being done in order to formulate "information pamphlets" for military personnel and their dependents. Ample instructions pertaining to the completing of the questionnaires were also included.

Each form of the questionnaire was assembled into four groups according to which vignette is presented first in the questionnaire. Each group will be referred to by the salient cue presented in the first vignette of the questionnaire (e.g., ETOH, or ethyl alcohol, only salient cue ETOH questionnaire). A Latin Square design was used to control for ordering of vignettes and form of the questionnaire.

**Procedure.** Twenty-four volunteers were obtained from each of the above populations (alcoholic and nonalcoholic). We then informed them that we were in the process of developing information pamphlets for possible use in the military services. These pamphlets were to be an education "tool" to better help military personnel identify and cope with often experienced situations. The situations were general in nature and therefore could be

**TABLE 3. Summary of Questionnaire Responses Collapsed over Form**

| | Experiment 2 | | | | | |
|---|---|---|---|---|---|---|
| Responses** | Professionals* | | Counselor* | | Others* | |
| | Total | % | Total | % | Total | % |
| **ETOH only†** | | | | | | |
| Caffeine | 0 | | 0 | 0 | 0 | 0 |
| ETOH | 67 | 93.06 | 67 | 93.06 | 54 | 75.00 |
| Other | 47 | 65.28 | 33 | 45.83 | 41 | 56.94 |
| **Caffeine only†** | | | | | | |
| Caffeine | 10 | 13.89 | 5 | 6.94 | 1 | 1.39 |
| ETOH | 37 | 51.39 | 27 | 37.50 | 41 | 56.94 |
| Other | 64 | 88.90 | 61 | 84.72 | 57 | 79.17 |
| **Caffeine & ETOH†** | | | | | | |
| Caffeine | 6 | 8.33 | 0 | 0 | 2 | 2.78 |
| ETOH | 65 | 90.23 | 62 | 86.11 | 60 | 83.33 |
| Other | 46 | 63.89 | 42 | 58.33 | 40 | 55.56 |
| **Environmental†** | | | | | | |
| Caffeine | 3 | 4.17 | 0 | 0 | 0 | 0 |
| ETOH | 55 | 76.39 | 42 | 58.33 | 45 | 62.50 |
| Other | 63 | 87.50 | 55 | 76.40 | 52 | 72.22 |

*n=24

**72 responses per category possible: based on 3 responses possible per situation; 24 questionnaires.

†Salient cue presented in situation (vignette) of questionnaire.

answered by military and nonmilitary personnel. Volunteers were then given the situation questionnaires and time was allotted for them to read the front page and answer any questions they had. Half the volunteers, (*12*) of each population were given Form A of the questionnaire while the other half received Form B.

**Results**

The responses to the questions for each vignette were placed into "response categories" and a tabulation for each sample population was done. A response is considered to be one or more statements referring to that category for each question asked.

Preliminary analysis of the data demonstrated that ordering of the vignettes within the questionnaire and the form of the questionnaire have no significant effects on the volunteer's responses to the questionnaire.

The information gathered was then collapsed over form and the summary of the questionnaire responses is presented in Table 3. In this table, we can relate the salient cue presented in each situation to the responses made to the questionnaires. It is evident that whatever the salient cue, ETOH, and "other" responses are prevalent and their percentage of occurrence all but dominates the situations presented. Caffeine responses, even with caffeine as the singular salient cue, are minimal and it is only the professional group that reaches a poor high of 13.89 percent.

Table 4 presents the questionnaire responses collapsed over vignettes and form. Here we see a total of 27 caffeine responses against many more ETOH and "other" responses. The group classified as professional have the most caffeine responses, but this is only 6.6 percent of the total that are possible. The 27 caffeine responses comprise only 2.16 percent of the total responses made to all vignettes of the questionnaires.

**TABLE 4. Summary of Questionnaire Responses**

**Collapsed over Form and Vignettes**

| | Experiment 2 | | | | | | |
|---|---|---|---|---|---|---|---|
| | Caffeine | | ETOH | | Other | | Total |
| | Total** | %† | Total** | %† | Total** | %† | |
| Professionals* | 19 | 6.60 | 224 | 77.78 | 220 | 76.40 | 463 |
| Counselors* | 5 | 1.74 | 198 | 68.75 | 191 | 66.32 | 394 |
| Other* | 3 | 1.04 | 200 | 69.44 | 190 | 65.97 | 393 |
| Total†† | 27 | 2.16 | 622 | 49.76 | 601 | 48.08 | 1250 |

*n=24
**Obtained responses
†Percent of total possible; based on 12 responses per category possible per questionnaire; 24 questionnaires.
††Percent of obtained total responses

Chi-square analyses across all three groups were run for caffeine, ETOH, and "other" responses, to each question of each vignette of the questionnaires. There were no significant differences between the groups in responding to any questions (all p's greater than .10).

Tests for correlated proportions were then run to assess the probability of obtaining a caffeine, ETOH, or "other" response as a function of the salient cue presented in the vignette of the questionnaire. With no significant differences obtained in the Chi-square analyses (all p's greater than .10), responses were collapsed over groups, and totals were computed for all three questions. Any mention of coffee (caffeine), or ETOH in response to questions 1, 2, or 3 of a given vignette, was considered to be a "caffeine" response or an "ETOH" response to that question. All other responses were classified as "other" responses.

The comparisons made and the results of the analyses are presented in Table 5. The results demonstrate that it is only in the comparison of Caffeine vs Environment that caffeine responses are significant (p less than .01, two-tailed), and that this significance is limited to responding to question 1 (caffeine diagnosis) and falls below levels of significance for questions 2 and 3. In other words, caffeine use/abuse was "diagnosed" but few questions relating to coffee/caffeine consumption were asked and little "advice" was given relating to the individual's consumption of caffeine.

ETOH and "other" responses are seen to be related to the presence of their salient cue whether alone or in combination with other cues. In other words, the presence of an ETOH cue or the absence of caffeine or ETOH cues results in a

**TABLE 5. Correlated Proportion Analysis of Response Categories**

| | | | | | |
|---|---|---|---|---|---|
| | | Experiment 2 | | | |
| Caff vs Et&Caff** | #1 Z=2.12 | Et vs Et&Caff | #1 Z=0.00 | Caff vs En | #1 Z=1.94 |
| | #2 Z=0.00 | | #2 Z=0.33 | | #2 Z=0.38 |
| | #3 Z=1.73 | | #3 Z=0.24 | | #3 Z=1.74 |
| Caff vs En** | #1 Z=2.64* | Et vs En | #1 Z=2.32* | En vs Et | #1 Z=3.53* |
| | #2 Z=1.00 | | #2 Z=2.98* | | #2 Z=3.58* |
| | #3 Z=1.73 | | #3 Z=3.65* | | #3 Z=3.66* |
| Et&Caff vs En** | #1 Z=1.41 | Et&Caff vs En | #1 Z=2.00* | En vs Et&Caff | #3 Z=3.00* |
| | #2 Z=1.00 | | #2 Z=3.67* | | #2 Z=2.98* |
| | #3 Z=0.00 | | #3 Z=3.53 | | #3 Z=3.00* |

*Significant at p less than .01, two-tailed test.
**Et=Alcohol
En=Environmental
Caff=Caffeine

significant amount of ETOH or "other" responses in the comparisons made (p less than .01, two-tailed).

Table 6 presents the response categories; caffeine, ETOH, and "other" as a percentage of the total responses made in comparison to the vignettes in the questionnaires. Here we see that the highest percentage of caffeine responses are obtained in the vignette where caffeine is the only salient cue, and there is a large decrease with the addition of any other salient cue, or the absence of a caffeine salient cue. However, in the ETOH responses, there is virtually little difference in responding to ETOH alone as compared to ETOH in combination with caffeine. The same conditions exist for "other" responses when we observe the percentages for Caffeine Only and Environmental salient cues.

Table 7 presents the response categories as a percentage of the total responses made to each vignette of the questionnaire, It is obvious here that ETOH and "other" responses constitute a large percentage of the responses to each question of the vignette, with the highest percentages present where the applicable salient cue is present in the vignette, along or in combination with another.

Caffeine responses, however, are seen to comprise a very small percentage of the total, regardless of the salient cue present. The highest percentage, 5.28 percent was

**TABLE 6. Response Category Percentages* as a Function of Total Responses across Vignettes**

**Collapsed over Groups and Questions**

| | Experiment 2 | | | | |
|---|---|---|---|---|---|
| Res. Cat. | Salient Cue of Vignettes | | | | |
| | ETOH | CAFF | ET&CAFF | EN | Total |
| % Caffeine | 00.00 | 59.30 | 29.63 | 11.11 | 100% |
| % ETOH | 30.25 | 16.88 | 30.06 | 22.83 | 100% |
| % Other | 20.13 | 30.28 | 21.30 | 28.29 | 100% |

*Percentage values are rounded off to two decimal places.

**TABLE 7. Response Category Percentages* as a Function of Total Responses Within Vignettes**

**Collapsed over Groups and Questions**

| Experiment 2 | | | | |
|---|---|---|---|---|
| Res. Cat. | Salient Cue of Vignettes | | | |
| | ETOH | CAFF | ET&CAFF | EN |
| % Caffeine | 00.00 | 05.28 | 02.48 | 00.95 |
| % ETOH | 60.84 | 34.65 | 57.90 | 45.08 |
| % Other | 39.16 | 60.07 | 39.62 | 53.97 |
| Total | 100% | 100% | 100% | 100% |

*Percentage values are rounded off to two decimal places.

achieved in the Caffeine Only salient cue vignette and zero percentage is present when ETOH Only is the salient cue.

The analyses of the questionnaires reveal that little concern is given to caffeine when diagnosing and treating alcoholism. Professionals, counselors, and others are not attending to caffeine in the rehabilitation of alcoholics, even though it has been demonstrated in many studies that caffeine will produce the symptoms described earlier. It might be that the presence of the salient cue, ETOH, results in a masking of other sources of the reported and observed symptoms. Logically, another possibility exists —that even without reference to alcohol, the caffeine source of anxiety, etc., would be ignored. It is also important to note that even in the absence of any salient cue (environmental vignette), ETOH responses are large in number. This may be due to the fact that an individual working in alcohol rehabilitation has come to associate these symptoms strongly with the misuse of alcohol, and in the absence of any familiar cues, relates to a previously identifiable but misattributed source.

**Discussion**

The first experiment supports the hypothesis that members of Alcoholics Anonymous are ingesting enough caffeine to experience the symptoms described and to warrant concern.

In the second experiment, an extremely low percentage of "caffeine responses" supports the hypothesis that caffeine use/abuse is not considered when diagnosing individuals presenting the symptoms described in the questionnaires.

Medical information and experiments support the fact that the symptoms described *can* arise from caffeine use. It is not necessary in this case to document that the symptoms are in fact due to caffeine usage. It is only necessary to realize that they *may* be due to caffeine, and yet professionals, counselors, and others are not considering them as a source of the symptoms.

On the basis of this research, one could not validly state that whenever these symptoms appear in an alcohol rehabilitation population that they are solely or invariably related to caffeine consumption. Nor, clearly, could one legitimately state that the alcoholic is really a caffeine addict, or that caffeine removal or reduction will "cure" the alcoholic. The evidence generated by these two studies permits the following interrelated conclusions:

- Caffeine consumption in the general population is high, with even higher amounts in the alcoholic population.
- Awareness of caffeine's effects is low.
- Caffeine use (as little as 500 mg daily) can create the symptoms described in the questionnaires. Caffeine use (in the range of 700+ mg daily) can produce more severe symptoms. The symptom cluster and severity will depend upon history and dosage.
- *Anxiety and depression are dangerous to the alcoholic* who is trying to abstain from alcoholic beverages. It is at these times he is most likely to take a drink.
- Rehabilitation efforts teach the alcoholic to identify and cope with anxiety and depression.
- Caffeine use by alcoholics can create symptoms as described. These symptoms can create anxiety and/or depression or they may intensify existing anxiety and/or depression in the alcoholic.
- Caffeine use and its effects should become a part of alcohol rehabilitation efforts. Alcoholics abstaining from alcohol, who are intaking caffeine heavily, are jeopardizing their treatment and sobriety.

This information should move us in the direction of searching for causal effects. A study of the interaction of these drugs may provide useful information about psychological dependence and psychological addiction.

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# Antimotion Sickness Drugs Evaluated at ENT Meeting

Dr. C.D. Wood of Louisiana State University Medical Center Shreveport, LA, recently reported to the American Academy of Otolaryngology the results of research on drug treatment of motion sickness. This research was conducted under contract from the National Aeronautics and Space Administration at Louisiana State University and the Naval Aerospace Medical Research Laboratory in Pensacola, FL. NASA funded the research to find methods for reducing motion sickness on its space shuttles.

Dr. Wood, a pharmacologist, reported his findings at the Association for Research program, which was held in conjunction with the American Academy of Otolaryngology's annual meeting on 28 Sept-2 Oct 1980, at the Anaheim Convention Center, CA.

It is believed that motion sickness results from disturbances in the fluid which stimulates the nerve endings in the inner ear. Deaf persons are immune to motion sickness because their ears do not function properly. All individuals with normal hearing and even animals are subject to motion sickness if the stimulus is prolonged and severe enough. Continuous, undulating, and rolling motion are the most common causes of motion sickness. A motion pattern which occurs every four seconds is the most likely to cause the malady.

According to Dr. Wood, anticholinergic drugs, which block stimulation of the nerve endings in the ear, are the best preventive treatment for motion sickness. However, there are side effects such as dry mouth, increased pulse rate, drowsiness, headache, stomach awareness, elaborate dreams, blurred vision, and vertigo. Therefore, these drugs in combination with other drugs which counteract the unpleasant side effects are the most effective. Examples are scopalamine 0.6 mg with amphetamine 10 mg or promethazine 25 mg with epinephrine 25 mg. Double blind experiments led to this conclusion by comparing placebos against test medication. These drugs are currently available by prescription only.

Effective over-the-counter antimotion drugs are the antihistamines such as Dramamine and Benadryl. A number of newer antihistamines have milder side effects. These include Bonine, Vibrazine, and Marezine. Increasing the recommended dosage of antimotion drugs increases side effects, but does not increase effectiveness. The duration of antimotion drugs is typically from four to six hours, and all oral doses should be taken at least one hour before exposure to motion. After the symptoms begin, oral drugs will not be helpful. For that reason, astronauts are equipped to give antimotion drug injections in order to speed up absorption.

It is interesting to note that susceptibility to motion sickness decreases with age and with the length of exposure to the motion. For example, most people at sea are less apt to have motion sickness after the third day. However, any change in the motion may produce a new susceptibility. Excess eating and drinking and being overweight increase the likelihood of motion sickness.

# Soviet Naval Medicine

CAPT R. Paul Caudill, Jr., MC, USN

# The Soviet Naval Medical Officer

*Part two in a continuing series.*

As the Soviet Navy grew under Sergei Gorshkov's leadership in the preceding decades, the need for individuals trained in naval disciplines grew and was recognized by the Soviet Government. Leonid Brezhnev stated that the new Soviet naval specialist must have a clear idea of the political goals of the Communist Party and nation, along with broad scientific and practical training. (*1*) That broad view is the background against which the development of the Soviet naval physician is carried out.

The long cruises anticipated by Gorshkov are now common for the men of the Soviet Navy. The long cruise is acknowledged to have brought new responsibilities to the Soviet naval medical support service. As technical development has brought endurance to the ships and their systems, human endurance has come to be seen by the Soviet naval hierarchy as being a significant limiting factor, as important as water, food, or fuel. (*2*) Effects of time, duration of cruise, stress, and sleep deprivation are seen as important to those at sea, as are morale, mutual respect, and sharing of complex experiences. In the environment at sea, the Soviet naval physician is seen as an essential member of the crew.

The Soviet naval physician is provided a demanding model to emulate. The behavior of a naval surgeon must be characterized by "loyalty to the code of the builders of Communism and the oath of a Soviet doctor." The physician is held to a Spartan ideal: "The doctor's profession is a meritorious deed. It requires selflessness and cleanliness of spirit and thought." (3) "The officer, having completed the higher military medical training institution, must possess high moral and psychological qualities and be a model of the observation of military regulations." (*4*) The naval physician is expected to have a thorough working knowledge of the military mission and the problems posed by the mission of the ship. (*5*)

One list of qualities required of the Soviet military physician included the following:

- Devotion to the homeland
- Ideological conviction
- Deep erudition
- Distinguished practical professional training
- Basic knowledge of military affairs
- Skill in organizing medical support of personnel
- Ability to provide political and military education for subordinates
- Irreproachable personal discipline (*6*)

Articles on Soviet military medicine are frequently filled with political and philosophical rhetoric, intended to inspire and enlighten the reader. However, pragmatic and realistic considerations dominate and in the end practical considerations emerge.

The ship's doctor was said to have a major responsibility as the "main figure" in strengthening and preserving the health of the crew of naval vessels. (*7*)

A unique part of the Soviet naval physician's responsibility resulted from his broad educational background. The ship's physician was described as being potentially a promoter of information, as an intellectual leader, and as a generally valuable, intellectual resource aboard ship. "This is particularly important now when the rising public education and cultural level of the naval draftees is evident." (*8*)

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The Soviet naval authorities described a strong commitment to the philosophy that the Soviet naval surgeon is a part of the whole ship. Some authors commented, introspectively, that some of their surgeons did not feel that commitment. In countering that negativistic sort of attitude, they pointed to naval physician heroes of the past and their contribution to naval progress. Again and again, they described the ship's physician as an intellectual and ideological leader and an actively contributing member of the ship's company. (*9*)

The complexity of the role filled by the ship's doctor was also acknowledged. "It is difficult to overestimate the doctor's role during a cruise, just as it is to list all facets of his activity during that time. . . . No matter how well a ship's doctor may be prepared, he will still get his real training independently from permanent medical installations and on a face-to-face basis with patients and diseases." (*10*)

Combat readiness was a most constant underlying theme. From the beginning of training in naval medicine, combat orientation was maintained. Psychological preparation of the physician for both combat and day by day operations was described as being essential. (*11*)

The work of the Soviet naval physician was not without recognition. While in their literature, the Soviets did not hesitate to hold up examples of poor performance by physicians, they were generous in their praise of those who achieved. Soviet line officers described high appreciation of their naval medical officer colleagues. (*12*)

In an article describing the life and career of a naval surgeon, Captain of the Medical Service, A. Shevchenko was honored through a description of his sea service, his struggle to develop his skills, and his performance at sea. He was said to have performed 33 major procedures, including one case done on a ship other than his own. That case required 16 liters of blood and blood substitutes. Additionally, he had performed significant study in the field of man-machine interfaces, fatigue, and environmental stresses. The article presented the image of the ship's physician as a highly capable generalist, a "universalist." (*13*)

The Soviet naval physician serves within a society, a political structure, and a military organization far different from that of the U.S. Whatever the true effect of the political and patriotic rhetoric on the thought process and self-image, it is reasonable to surmise that the Soviet naval physician serves with a feeling of personal pride in being a part of the voyage of the Soviet people toward their "national destiny."

It is clear, from the tone of many articles reviewed, that military service is an honorable and respected profession, and that the physician has a special place in the military structure. Within the Soviet naval community, according to the Soviet literature, the physician has a direct and involved role in the substance of the Navy's mission. The naval physician is not completely isolated in shore facility or in purely professional clinical, educational, and research pursuits. Apparently, there is a strongly forged link between the "shore establishment" and executors of the naval mission in operations at sea all over the world.

In the military medical literature, there is clear evidence of cooperation between the medical educational and intellectual community and the naval medical support structure serving the Soviet fleet. In that cooperation, the physician is described repeatedly as an integral part of the individual ship and its crew, as a contributing member of the staffs supporting the ships and fleets, as a participant and guiding force in operational research, and as a leader in the senior ranks involved in contingency and strategic planning. The physician appears not to be an isolated intellectual or clinical technician; the physician is an integral part of the Soviet naval medical support structure at all levels, working side by side with line counterparts.

A critical difference between the structure of naval medicine in the Soviet Union and the U.S. is the apparent absence, in the Soviet Union, of the tremendous and unrelenting pressure of hundreds of thousands of nonmilitary personnel eligible for care by the organization dedicated to naval medical support. In the U.S., this paradoxical situation is most perplexing. Those individuals are "our own" and we are committed to care for them. They bring with them a broad scope of needs and problems, and provide a fertile community in which professional practice and growth can occur. Through their care, we have benefited in many ways. However, the urgency and extent of their need, coupled with today's resource constraints, sometimes forces hard decisions concerning the utilization of resources. In some situations, a fleet support-hospital dichotomy has been inappropriately prominent. Soviet naval medical authorities are able, the literature indicates, to tend their primary naval medical support mission without the necessity of addressing this issue so critical in our own Navy.

The "authority" or credibility of the physician in Soviet naval medicine, in the end, seems to be tied to intimate involvement with the total range of the Soviet naval mission. Soviet naval physicians, whether in centers of education, fleet support

facilities, or in units afloat, appear not to be isolated from the mission they are committed to support. Their ability to dedicate significant portions of their attention to the naval medical support mission is facilitated by the presence of state controlled, staffed, and directed institutions. Those institutions provide for the care of the Soviet equivalent of our "dependent and retired" population. Relieved of much of this concern, the Soviet naval physician can pay as much attention to the naval support mission as to the maintenance of clinical, research, and educational competence.

# Military Medical Order of Lenin Medical Academy Imeni S.M. Kirov (VMEA)

VMEA is the abbreviation of the Military Medical Order of Lenin Medical Academy Imeni S.M. Kirov located in Leningrad. Its origins can be traced to a medical-surgical school located in Petersburg in the eighteenth century. In 1798, the medical-surgical school was restructured as the Medical Surgical Academy. In 1881, it was again restructured as the Military Medical Academy (VMEA).

VMEA is sometimes referred to in Soviet literature as VMOLA, an abbreviation for the full name of the Academy in the Soviet language, Voyenno-Morskaya Ordena Lenina Akademiya, and the distinction between the two should be noted. VMEA is the abbreviation normally used for the Medical Academy.

Before the October 1917 revolution, VMEA was seen as having problems related to the social structure of society under the Czar. After the revolution, changes were carried out through educational reform and radical changes in the academic order in VMEA. Time spent in didactic lecture courses was reduced. Practical training was increased. The specific needs of the Army were addressed in the curriculum. Curriculum revision was accomplished to eliminate duplication. Military subjects were introduced with special emphasis on health and preventive medicine. The testing of medical student performance was revised.

In 1918, VMEA was incorporated into the Red Army by the Commissariat of Military Affairs of Petrograd (Leningrad). Professors and teaching staff found themselves enlisted into active military service. In 1922, courses were introduced to improve abilities of military and naval physicians. Courses included military medical tactics, military medical administration, military field surgery, and military hygiene.

The early 1930s saw intensified work in VMEA on military and military health training. Separate chairs were established for military and military health subjects, and courses in field surgery and military chemistry were organized. There was question, still, about quality of education. VMEA was still said to be a "semi-civilian" educational facility with "undisciplined students and teachers with insufficient education in military affairs." There was little difference in the training of physicians at VMEA and in civilian medical schools. Therefore, the curriculum was again altered to satisfy the needs of the armed forces as they grew.

Before the 1917 revolution, scientific research activities at VMEA did not satisfy the urgent needs of the military. While the research activities were conducted in accordance with the desires of the heads of departments, those desires did not correspond with the needs of the military. The education of military physicians suffered because of this. Immediately after the revolution and during the 1920s, the research at VMEA was not on a level equivalent to the education system. There were severe shortages of material because of war and destruction caused by the revolution. Research planning activities began again in the early 1930s. The technical developments in the rearming of the army and navy, the rapid development of aviation, and special force development, such as submarines, levied new requirements for medical services for the armed forces.

During World War II, VMEA was moved to Samarkand for the period of the war. Because of the war, the educational system was revised, and research activities were expanded. Active scientific observation was initiated on the battle fronts, and valuable data was produced for later research in military pathology. Battlefront studies were accomplished in surgery in the field, wound management, hypoxia, cardiovascular diseases, nutrition, and many other subjects.

In 1942, VMEA was extensively reorganized. Faculties were established in special areas including medical-command, therapeutic and preventive medicine, and military medicine. Several new chairs of military medicine were established.

Personnel from VMEA had been active in all the Russian wars. During the 1917 revolution, the clinics of VMEA were switched over to medical aid for the wounded. Many professors were sent to the front to serve in direct support of the active military forces. During

*Soviet sailors from a Kashin class guided missile destroyer*

the Soviet-Finnish war of 1939-1940, VMEA sent 678 individuals to the front. An "overwhelming majority" of the workers in VMEA served in World War II and many were killed.

In the early 1950s, new means of destruction, including thermonuclear weapons, appeared. VMEA was faced with new problems of organization and tactical doctrine. There was a growing need for research in pathology and protection of both individuals and groups against weapons of mass destruction. Wide and comprehensive research efforts were initiated by workers at VMEA.

In June 1954, VMEA was awarded the Order of Lenin for services rendered in the training of military medical personnel and for the development of medical personnel and medical sciences. From the time of that award, VMEA has been titled the Military Medical Order of Lenin Academy Imeni S.M. Kirov.

In 1956, a Faculty for Naval Medicine was founded. In that same year, VMEA became involved in educational and research activities relating to the naval forces.

In 1960, the present structure of VMEA was established. Since 1960, any additions to the staff have been made primarily for the expansion of its scientific research activity.

VMEA is divided into four departments or faculties: Medical-Command, Therapy and Preventive Medicine, Military Medicine, and Naval Medicine. The faculty for Medical-Command and the faculty for Therapy and Preventive Medicine are organized for the advanced training of military physicians. The faculty of Military Medicine is organized for the basic training and preparation of military troop unit physicians. The faculty for Naval Medicine is responsible for training naval physicians.

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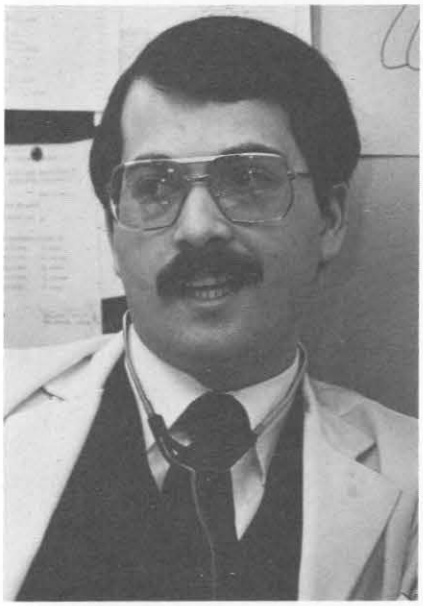
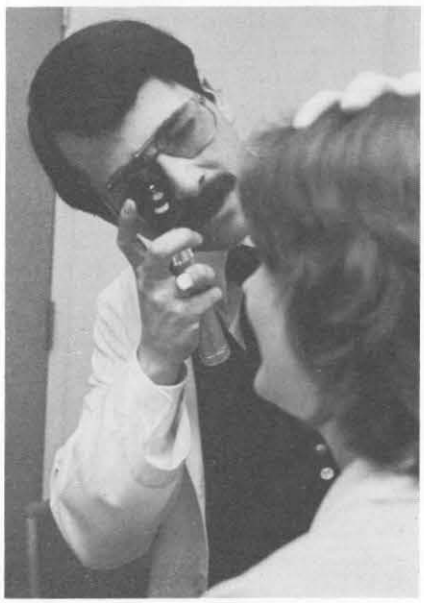
# Navy Doctor Completes Assignment in Land of Frost and Fire



*Dr. de Triquet*



For LCDR John de Triquet, MC, of West Caldwell, NJ, spending two years at the U.S. Naval Station in Keflavik, Iceland, was a growing experience, both professionally and personally.

The Newark native was the only pediatrician at the base hospital, which provides health care for 3,000 U.S. military members and 2,000 spouses and children.

Dr. de Triquet left Keflavik in July to return to the familiar surroundings of NRMC Portsmouth, VA. He completed his residency there in 1978, after attending St. Vincent College, Latrobe, PA, and Temple University Medical School in Philadelphia.

"I asked for the assignment in Iceland because I knew it would be good professionally," he explained. "Being isolated from large medical centers meant I had to make all the decisions. I also learned more about organizing and operating a pediatrics clinic."

Dr. de Triquet was responsible for the care of approximately 1,500 children. "I was on call 24 hours a day, but I found it to be very enjoyable because it was comparable to having a private practice.

"Being available was important since the people here are thousands of miles from home, and they don't have the benefits of the extended family," de Triquet noted. "It's hard for a young couple with their first child to be isolated from their parents and other family members.

"I think my presence made a big difference for many parents and their children. The sense of maturity I gained as a physician was a valuable experience."

The base hospital is an important part of the support facilities available for U.S. military personnel in Iceland.

The 1,100-year-old nation is about the size of Ohio with a population of 223,000. Known as the "Land of Frost and Fire," Iceland is located 200 miles off the southeastern coast of Greenland.

The Soviet Union's Northern Fleet must pass near Iceland or other NATO controlled areas to have access to the Atlantic. Soviet long-range aircraft also fly close to Iceland on the route from Moscow to Havana. Due to its stategic location, Iceland is an effective base for antisubmarine warfare patrol aircraft, radar and communications facilities, and fighter-interceptor aircraft.

Iceland's landscape consists of the largest glaciers in Europe, rough central highlands, and volcanic areas. Only one-fourth of the land is usable. The rugged coastline provides living space for the Icelanders, shelter for their fishing fleets, and farmland for their sheep.

Although its northern tip almost touches the Arctic Circle, Iceland's


*Fishing boats await repair in drydock at Keflavik, Iceland. The boats are a familiar sight for U.S. military members serving in Iceland.*

climate is moderated by the Gulf Stream. The winters are similar to those in New York or New England and the summer temperatures usually range in the 50s. Iceland only has two seasons, winter and summer. The weather is very changeable with frequent wind and rain.

"I found the weather bothersome," de Triquet said. "I didn't mind the cold but I disliked the strong winds. The weather really wasn't harsh, but I had to adapt to days which consisted of constant wind and rain."

Iceland has unusually long winter nights and summer days. In December there are about six hours of daylight and in May, June, and July, it never really gets dark.

"The long hours of darkness and daylight didn't bother me, but it does affect many people, especially the children," he observed. "Their sleep and behavior patterns are sometimes disturbed, and it can be a problem for the parents."

Dr. de Triquet plans on leaving the Navy after completing his active duty commitment to go into civilian practice.

"I don't have any regrets concerning the Navy," he stated. "My residency training was equal, if not better, than the training I got at Children's Hospital in Philadelphia, which is a prestigious institution."

De Triquet does plan to stay in the Naval Reserve.

"Serving in the military is a responsibility we all have. I've gained a great deal through my Navy experiences and I don't want to give up the military lifestyle completely," he concluded.

—Story by Judith M. Johns. Photos by Bill Pointer. □

# Colonoscopic Evaluation of Bowel Preparation

CAPT Robert L. Glass, MC, USNR  Daniel H. Winship, M.D.  Wallace A. Rogers

Mechanical cleansing of the colon and reducing its bacterial population have lessened septic complications following colon surgery. (*1,2*) This procedure may also decrease ischemic colitis associated with abdominal aortic surgery (*3*) and might benefit persons with temporarily depressed immunoresistance, as with cancer chemotherapy or low flow (shock) states of various etiologies. (*4*)

Mechanical cleansing can be effected quickly and effectively by infusing large volumes of normal saline via a nasogastric tube—"whole gut lavage." (*5*)

Suppressing the colon bacteria requires drugs effective against aerobic and anaerobic organisms, using the drugs long enough to get maximum suppression but not long enough to permit emergence of resistant organisms. Neomycin/erythromycin and neomycin/metronidazole are two effective combinations. In previous studies, cultures have been taken by anaerobically aspirating the bowel at the time of surgery (Table 1).

**TABLE 1. Bacterial Concentrations of Colon Contents Obtained During Operation**

(Three Days of Clear Liquid Diet and Purging; Neomycin/Erythromycin on the Last Day)

| | Placebo (47 patients) | Antibiotic (44 patients) |
|---|---|---|
| Aerobic | 7.0 ± 0.2 | 3.2 ± 0.4 |
| Anaerobic | 8.8 ± 0.2 | 3.7 ± 0.4 |

Expressed as $Log_{10}$ CFU/ml ± 1 SEM

The present study evaluates bowel cleansing colonoscopically.

**Material and Methods**

Forty-two patients referred for colonoscopy were divided into groups and studied. Patients with congestive heart failure, severe pulmonary, renal, or hepatic insufficiency were omitted because of the transient salt load the lavage prep imposes.

Patients were given water only after a regular lunch; a fasting state reduces saline absorption. At 1830 a nasogastric tube was passed, the patient given metoclopramide 10 mg IV and 9,000 cc of body temperature normal saline was dripped in during the next three hours at 3,000 cc/hr. Using metoclopramide and warmed saline almost eliminates patient complaints of distension, cramping, and vomiting.

Group 1 was lavaged with normal saline.

Group 2 had 3.0 gm of neomycin and 3.0 gm of erythromycin base evenly mixed in the last 6,000 cc of the lavage.

Group 3 had 3.0 gm of neomycin and 2.25 gm of metronidazole mixed into the lavage solution.

Group 4 had the neomycin/erythromycin lavage and a warm 2,000 cc saline enema containing 250 cc of providone iodine given at 0600 the day of colonoscopy. Groups 1,2, and 3 had a 2,000 cc plain saline enema at 0600 the day of the colonoscopy.

At the time of colonoscopy, aspirates were collected anaerobically from rectum, descending, transverse, and right colon. Anaerobic conditions were maintained by:

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**TABLE 2. Bacterical Concentrations ($Log_{10}$) of Colon Using Lavage Preparation**

| Preparation | Aerobic | | | Anaerobic | | |
|---|---|---|---|---|---|---|
| | Mean | Median | Range | Mean | Median | Range |
| Group #1 (10 pts) | 5.5 ± .86 | 5.5 | (1-10) | 7.3 ± .68 | 7.0 | (3-10) |
| Group #2 (11 pts) | 2.5 ± .40 | 2.5 | (0-4.5) | 3.0 ± .46 | 3.0 | (0-5.5) |
| Group #3 (7 pts) | 3.9 ± 1.04 | 2.9 | (1-9) | 2.8 ± 1.17 | 2.5 | (0.5-9) |
| Group #4 (4 pts) | 3.0 ± .44 | 3.3 | (2-4) | 3.2 ± .83 | 3.3 | (1-5) |
| Culture of scope only | 0.4 | 0 | (0-4.0) | 0.6 | 0 | (0-0.4) |

Mean ± SEM
Statistical Evaluation by Wilcoxon Rank Sum Test
Group #1 vs. Group #2
Aerobic $p=.005$ Anaerobic $p < .005$
Group #1 vs. Group #2
Aerobic $p=.125$ Anaerobic $p=.005$

- Using $CO_2$ as the insufflating gas in the colonoscope.
- Collecting the specimens in a $CO_2$-filled lukens tube hooked in circuit with the suction tubing.
- Using needle and syringe to transfer the specimen from the lukens tube to an anaerobic transport medium for immediate transport to the laboratory.

Each specimen was cultured for aerobic and anaerobic organisms. The mean of the counts ($log_{10}$) for each exam was calculated and recorded.

## Results

The early morning enema was found necessary to uniformly have a mechanically clean bowel. In 10 patients the colonoscope was cultured prior to insertion by aspirating water through it, the results indicate that the scope-cleaning technique was satisfactory.

Both neomycin/erythromycin and neomycin/metronidazole suppress colon bacteria significantly. An early morning enema (2,000 cc) was necessary to get a really clean colon, but using dilute providone iodine as the enema, did not suppress colon bacteria more than antibiotics alone (Table 2).

## Conclusions

- A nonobstructed colon can be mechanically and bacteriologically cleansed with a 12-hour prep using saline lavage and antibiotics.
- Colonoscopy with quantitative cultures can evaluate new techniques of colon preparation. Various antibiotic/antiseptic combinations can be evaluated and the promising ones subjected to clinical trial.

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# Dental Officer's Guide to Therapeutic Incompatabilities

LCDR Richard N. Wiernik, DC, USN

Several years ago patients would take a prescription from their local doctor to be filled by a pharmacist who ran the corner drugstore. The physician or dentist was usually treating the patient for a specific ailment and quite often the drug and other ingredients in the prescription required compounding. It was a concise, orderly, and straightforward system between doctor, patient, and pharmacist.

Today, however, this interaction between professional and layman has become more complex as patients now have several doctors and may receive multiple prescriptions from each one. Also, the modern doctor may likely be treating an individual for several diseases taking place concurrently. Patients may also see many doctors and go to different pharmacies with perhaps more than one prescription, many of which require no compounding. Developing a patient drug profile, therefore, has become extremely difficult, if not impossible, and the chances of side effects due to therapeutic incompatabilities or drug interactions have increased significantly.

What are the basic mechanisms of drug interactions that lead to therapeutic incompatabilities?

- **Intestinal Absorption.** Absorption of the drug tetracycline from the gut is impaired by antacids. (*5*)
- **Plasma Protein Binding.** Drugs bound to plasma protein are inactive. However, the unbound drug causes the pharmacologic or toxic effect like the oral anticogulant bishydroxycoumarin that can cause hypoglycemia by displacing tolbutamide from plasma protein. (*5*)
- **Tissue Protein Binding.** Some drugs may be displaced from tissue protein by other drugs that have a greater binding affinity for the same binding sites. The displaced drug then exhibits its pharmacologic effect. (*5*)
- **Biotransformation.** Specific drugs can stimulate or inhibit the metabolism of another drug like phenobarbital stimulating the metabolism of anticoagulants thus reducing its therapeutic effect. (*5*)
- **Renal Excretion.** A drug such as probenecid inhibits the renal tubular secretion of penicillin. This is a desirable side effect because the result is a higher plasma level of penicillin available to fight disease. (*5*)
- **Action at Receptor Sites.** By competing for receptor sites a drug like atropine can block the activity of acetylcholine. (*5*)
- **Body Constituents.** Altering ion concentrations in the body such as lowered serum potassium (hypokalemia) caused by diuretics can result in cardiac arrhythmia if a patient is taking digitalis glycosides. (*5*)
- **Pharmacogenetic Factors.** Studies have provided evidence that an individual's genetic makeup is relevant in determining final drug disposition. (*2*)

Therapeutic incompatability can also be influenced by defective metabolic processes, allergic hypersensitivity, age, sequence of administration of drugs, route of administration, duration of therapy, and dose response which is affected by the dose and dosage form of the drug given. (*1,2*)

The following tables list some drugs commonly prescribed in dental practice and those drugs prescribed by physicians that interact with them. Although each category is by no means complete, the dental officer may find the tables a handy reference.

The complexity of this area of medicine reemphasizes the importance of taking a complete medical history in dental practice, including extensive documentation of the drugs a patient may be taking.

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**TABLE 1. Analgesic Drug Interactions** (*2,3,4,5*)

| Drug | Interactions with | Drug Interaction |
|---|---|---|
| **Salicylates** | Coumarin Anticoagulants (Panwarfin, Coumadin) | Enhanced anticoagulation due to decreased binding to plasma protein, resulting in bleeding episodes. |
| | Probenecid (Benemid) | Decreased uricosuria due to sharing of common binding site on plasma albumin molecule. |
| | Phenylbutazone (Butazolidin) | Decreased uricosuria and increased mucosal irritation. |
| | Sulfonylurea Hypoglycemics (Orinase) | Enhanced hypoglycemia occurs due to decreased binding to plasma protein resulting in increased clinical effect. |
| **Acetaminophen (Tylenol)** | Coumarin Anticoagulants (Panwarfin, Coumadin) | Enhanced anticoagulation. Mechanism not established. |
| **Meperidine (Demerol)** | MAOI's (Parnate) | Hypotension and coma. Mechanism not established. |
| | Phenothiazines (Phenergan) Imipramine Antidepressants (Tofranil) | Enhanced respiratory depression. |
| | Diazepam (Valium) | Enhanced analgesia. |
| | Amphetamines (Dexedrine) | Enhanced analgesia. |
| | Neostigmine (Prostigmin) | Enhanced analgesia. |
| **Morphine** | Imipramine Antidepressants (Tofranil) and Propranolol (Inderal) | Enchanced respiratory and CNS depression. |
| | Phenothiazines (Phenergan) | Enhanced analgesia. |
| | Ethyl Alcohol | Produces increased clinical, pharmacologic, and untoward effects of alcohol. |
| **Codeine** | Aspirin (in Empirin Compound #3) | Enhanced analgesia. |

**TABLE 2. Anti-Infective Drug Interactions** *(2,3,4,5)*

| Drug | Interacts with | Drug Interaction |
|---|---|---|
| **Penicillin** | Coumarin Anticoagulants (Panwarfin, Coumadin) | Enhanced anticoagulation by increasing pharmacologic and clinical effect. |
| | Probenecid (Benemid) | Enhanced antimicrobial action by decreasing excretion of penicillin. |
| | Sulfonamides | Some inhibit G.I. absorption of penicillin while others prolong the half-life of penicillin. |
| | Tetracycline (Achromycin V) and Erythromycin (Erythrocin) | Decreased antimicrobial action by interfering with the bactericidal action of penicillin. |
| **Erythromycin (Erythrocin)** | Lincomycin (Lincocin) | Decreased antimicrobial action. Mechanism not established. |
| **Tetracycline (Achromycin V)** | Coumarin Anticoagulants (Panwarfin, Coumadin) | Enhanced anticoagulation activity by decreasing Vitamin K production by gut bacteria. |
| | Antacids, Milk, Ferrous Sulfate, Sodium Bicarbonate | Decreased oral absorption of tetracycline. |
| **Sulfonamides** | Coumarin Anticoagulants (Panwarfin, Coumadin) | Enhanced anticoagulation by displacing from plasma protein. |
| | Tolbutamide (Orinase) | Increased hypoglycemia results due to increased serum level and half-life of tolbutamide. |
| | Salicylates and Phenylbutazone (Butazolidin) | Increased antimicrobial action by decreasing binding to plasma protein with possibility of sulfonamide toxicity resulting. |
| **Cephalosporins (Keflin)** | Probenecid (Benemid) and Phenylbutazone (Butazolidin) | Enhanced antimicrobial action by reducing renal clearance of the cephalosporins. |

**TABLE 3. Sedative-Hypnotic Drug Interactions** *(2,3,4,5)*

| Drug | Interacts with | Drug Interaction |
|---|---|---|
| **Barbiturates** | MAOI's (Parnate) | Severe CNS depression due to decreased metabolism of barbiturate resulting in increased clinical effect. |
| | Coumarin Anticoagulants (Panwarfin, Coumadin) | Decreased anticoagulation due to increased metabolism of coumarins. |
| | Phenytoin (Dilantin) | Decreased effectiveness of phenytoin resulting from its increased metabolism. |
| | Tricyclic Antidepressants (Elavil) | Enhanced metabolism and renal excretion of the tricyclic antidepressants occurs. |
| | Griseofulvin (Fulvicin) | Oral absorption of griseofulvin inhibited resulting in decreased clinical effect. |
| | Caffeine | Hypnotic effect inhibited. |
| | Codeine | Hypnotic activity enhanced. |
| | Ethyl Alcohol | Pharmacologic and clinical effects of alcohol increased, combined CNS depression with barbiturates. |
| | Antacids | Decreases absorption and clinical effect of barbiturates. |
| | Digitalis Glycosides | Converts digitoxin to digoxin resulting in decreased therapeutic effect. |
| **Benzodiazepines (Librium, Valium)** | Phenytoin (Dilantin) | Inhibits phenytoin metabolism. |
| | Antacids | Decreased oral absorption. |
| | Barbiturates | Additive effects occur. |
| | Tricyclic Antidepressants (Elavil) | Enhanced sedation and atropine-like effects result. |
| **Chloral Hydrate (Noctec)** | Coumarin Anticoagulants (Panwarfin, Coumadin) | Decreased anticoagulation results from increased rate of metabolism of the anticoagulant. It has also been reported that a transient increase in the hypothrombinemic effect is seen with Panwarfin administration in some patients. |

**TABLE 4. Miscellaneous Drug Interactions** *(2,3,4,5)*

| Drug | Interacts with | Drug Interaction |
|---|---|---|
| **Phenothiazines** | Atropine | Enhanced sedation |
| | Ethyl Alcohol | Increases pharmacological and clinical effect of ethyl alcohol. |
| | Barbiturates | Increases pharmacological and clinical effect of barbiturates and reduces antipsychotic effect of the phenothiazines. |
| | Levodopa (Larodopa) | Decreases effect of levodopa leading to lack of antiparkinson action. |
| **Pyridoxine (Vitamin $B_6$)** | Levodopa (Larodopa) | Inhibits antiparkinson action of levodopa by increasing its metabolism. |
| **Ascorbic Acid (Vitamin C)** | Coumarin Anticoagulants (Panwarfin, Coumadin) | Impairs anticoagulation response. Mechanism not established. |
| **Folic Acid** | Phenytoin (Dilantin) | Increases metabolism of phenytoin resulting in decreased anticonvulsant activity. |
| **Coumarin Anticoagulants (Panwarfin) (Coumadin)** | Phenytoin (Dilantin) | Causes decreased binding of anticoagulant to plasma protein resulting in a transient increase of anticoagulant effect. This is followed by a possible decrease in anticoagulation due to increased metabolism of the coumarin. |
| | Meprobamate (Equanil) | May stimulate metabolic degradation of coumarins. |
| | Oral Contraceptives | May increase the activity of clotting factors of blood and reducing the response of coumarins. |
| | Corticosteroids | Produce hypercoagulability of blood by an antagonistic effect. |

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# NOTES & ANNOUNCEMENTS

## NURSE AND CORPSMAN DIE ON MERCY MISSION

A Navy man and a Whatcom County, WA, sheriff's deputy were the only two survivors of the crash of a NAS Whidbey search and rescue helicopter on 11 Sept 1980 in the wild, rugged mountains of the North Cascades. Copilot LTJG Rick Wall, and Deputy Dustin Hurlbut were miraculously rescued by a pair of young hikers, but the other five Navy men aboard the ill-fated rescue craft were killed. Dead are pilot LCDR Dan M. Mahoney, crew chief ADC Thomas R. Sanders, crewman AMS3 Richard A. Kubald, and Navy medics LT Patrick F. Kidgell of the Navy Nurse Corps and HMC Roy E. Lewis, Navy Hospital Corpsman.

The search and rescue helo left Whidbey Island the night of 11 Sept 1980 to assist the Whatcom County sheriff in recovering a young Canadian who was injured in a fall on Mount Redoubt. The mountain is located in the North Cascades National Park in what was termed some of the toughest country in the continental United States. Mount Redoubt is about 60 miles northeast of Bellingham, WA, just south of the Canadian border.

The two survivors of the crash were found on the morning of the 12th by two hikers, who luckily were employees of Harbor View Medical Center in Seattle and knew what to do when they found the men alive but unable to move. They administered first aid, gave them hot food and liquids to help prevent hypothermia, then wrapped them in blankets and made a shelter for them before hiking out for help. They hiked for 12 straight hours before meeting members of an advance search party.

Both survivors suffered burns and other injuries but are now reported to be in good condition. Meanwhile, the object of the rescue mission, the injured hiker, was located by a Canadian search party. He had suffered an ankle injury and was unable to walk out of the rugged mountain area.

Not since 1967 has Whidbey lost a search and rescue helicopter. There were no fatalities in that incident. Since 1971, Whidbey Search and Rescue Unit has flown 1,330 missions with over 15,000 hours of accident-free flying.

—Reprinted from *Crosswinds,* the weekly of NAS Whidbey Island, WA, 19 Sept 1980.

## IN MEMORIAM

LT *Patrick F. Kidgell,* NC, USN, died 11 Sept 1980 in a helicopter crash during a search and rescue mission.

Born 25 July 1951 at Lovell, WY, he graduated from Lovell High School in 1969 and received an RN degree at St. Vincent School of Nursing, Billings, MT, in 1972. LT Kidgell entered the Navy on active duty 13 Sept 1972, and served at NRMC Jacksonville, FL, and Naval Hospital, Taipai, Taiwan. He reported to Naval Hospital, Whidbey Island 18 Jan 1979 to serve as the Emergency Department supervisor. At the time of his death, he was serving as a cardiopulmonary resuscitation instructor, clinical assistant instructor, infection surveillance nurse, and committee member of the Nursing Department Continuing Education and Nursing Care Review Committee.

HMC *Roy E. Lewis,* USN, died 11 Sept 1980 in a helicopter crash during a search and rescue mission.

Born 28 Mar 1946 at Johnson City, NY, he graduated from North Central High School, Spokane, WA, in 1963. He was a graduate of Mohegan Junior College, Norwich, CT. HMC Lewis entered the Navy on active duty 27 Sept 1963. Throughout his naval career, he attended numerous schools and served with many commands, including the Third Marine Division in Okinawa, Vietnam, and Camp Pendleton; Naval Air Stations, Lakehurst, NJ, Alameda, CA, South Weymouth, MA, and Atlanta, GA. He also served at the Naval Submarine Medical Center, Groton, CT, and aboard the submarines USS *Hammerhead* and USS *Cincinnati,* and at NRMC Portsmouth, VA. At the time of his death, HMC Lewis was serving at Naval Hospital, Whidbey Island as Assistant Chief, Fiscal and Supply Service in addition to serving as Medical Coordinator, NAS Search and Rescue Mission. Chief Lewis was the recipient of the Presidential Unit Citation Medal, four Good Conduct awards, and the Vietnam Service Medal.

CAPT *James I. Myers,* MSC, USN, former Navy Health Care Administrator, died 17 Sept 1980 after a long illness, at NNMC Bethesda, MD.

Born in Jacksonville, IL, on 3 April 1928, CAPT Myers entered the Navy in May 1945 and was commissioned in the Medical Service Corps on 16 Oct 1956. He graduated from the Naval School of Hospital Adminis-

tration, Bethesda, MD, in 1962 and received his M.S. degree in personnel administration from George Washington University, Washington, DC, in 1965.

CAPT Myers' duty stations were the Naval Hospital, Bethesda, MD (1956-59); BUMED 1959-61); Naval Hospital, Portsmouth, VA (1963-70); Naval Support Activity, Danang, Republic of Vietnam (1969-70); U.S. Atlantic Fleet, Norfolk, VA (1971-72); NRMC Camp Lejeune, NC (1972-73); Supreme Allied Commander, Atlantic, Norfolk (1973-76); and Tri-Service Medical Information System (TRIMIS) and Uniform Chart of Accounts (UCA), Department of Defense from 1976 to the time of his death.

## RESMOP PROGRAM

The Reserve Medical Officer TEMAC Program (RESMOP) began in FY79 to temporarily fill existing physician shortages on Atlantic Fleet ships.

Announcements were sent to about 5,000 medical officers on the Reserve roster, inviting them to volunteer for one to four months of temporary active duty. Approximately 280 medical officers responded, providing doctors not only for Atlantic Fleet ships, but for naval hospitals in CONUS and abroad.

RESMOP produced many positive results:

- It demonstrated that the Naval Medical Reserve is a viable resource, capable of response to need.
- The physicians on TEMAC are providing needed services in a cost effective manner.
- It provided the opportunity for paid active duty for many Category D physicians.
- It provided interesting and adventurous duty for many Reserve physicians which will aid retention.
- It served as a "mini-mobilization" exercise which resulted in streamlining many procedures such as order-writing, transportation, and pay at the end of duty.

RESMOP is an ongoing program and available upon request. For further information, contact: LCDR Bob Campbell, MSC, USN, BUMED (MED 02D), Washington, DC 20372, Telephone: (202) 254-4262 or toll free (800) 424-5489.

## RESERVE RELICENSURE CREDIT

Receiving continuing education credit for relicensure of MDs, DDSs, RNs, and LVNs while attending regular Naval Reserve drills is done for the first time in the U.S. by the eight Medical/Dental Naval Reserve units of San Diego.

Through the auspices of the Medical/Dental Planning Board for Training of the San Diego Naval Reserve Center, seminars on desert medicine, burns, alcoholism, arctic medicine, and other medical areas have been planned and presented quarterly. Most of the speakers are naval reservists prominent in their field.

Retention in the Naval Reserve has been enhanced considerably by the continuing education credits for these health professionals. Many of these professionals receive enough continuing education to keep their professional licenses current.

For additional information, call: LT John Neal (714) 745-9274.

## MSC NOMINEES FOR ACHA

The following Medical Service Corps officers have been accepted into Nominee membership status by the American College of Hospital Administrators. Congratulations to these new ACHA affiliates.

CDR G.H. Gregory, MSC, USN
CDR R.A. Payton, MSC, USN
LCDR R.S. Bolshazy, MSC, USN
LCDR R. Ferda, MSC, USN
LCDR D.G. Jackham, MSC, USN
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LCDR H.E. Phillips, MSC, USN
LCDR L.R. Weappa, MSC, USN
LT B.R. Colfack, MSC, USN
LT F.M. Knox, MSC, USN
LT M.D. Landry, MSC, USN
LT M.J. Wendling, MSC, USNR
LT D.A. Wilbur, MSC, USN
ENS T.L. Tatman, MSC, USNR

## ARMED FORCES SCIENTISTS' MEETING

The 6th annual meeting of The Society of Armed Forces Medical Laboratory Scientists will be held 13-16 Nov 1980 at the Stouffer's, National Center Hotel, Arlington, VA.

For further information, inquiries may be addressed to: CDR D.E. Schubert, MSC, USN, 110 Gilbert Rd., Rockville, MD 20851.


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